Cambridge Assessment International Education

Cambridge International AS & A Level

PHYSICAL EDUCATION **9396/12**

Paper 1 **October/November 2022**

MARK SCHEME

Maximum Mark: 90

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2022 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

[Turn over

PUBLISHED

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5: Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).
GENERIC MARKING PRINCIPLE 6: Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

Science-Specific Marking Principles

1	Examiners should consider the context and scientific use of any keywords when awarding marks. Although keywords may be present, marks should not be awarded if the keywords are used incorrectly.
2	The examiner should not choose between contradictory statements given in the same question part, and credit should not be awarded for any correct statement that is contradicted within the same question part. Wrong science that is irrelevant to the question should be ignored.
3	Although spellings do not have to be correct, spellings of syllabus terms must allow for clear and unambiguous separation from other syllabus terms with which they may be confused (e.g. ethane / ethene, glucagon / glycogen, refraction / reflection).
4	The error carried forward (ecf) principle should be applied, where appropriate. If an incorrect answer is subsequently used in a scientifically correct way, the candidate should be awarded these subsequent marking points. Further guidance will be included in the mark scheme where necessary and any exceptions to this general principle will be noted.
5	‘List rule’ guidance For questions that require ***n*** responses (e.g. State **two** reasons …): • The response should be read as continuous prose, even when numbered answer spaces are provided. • Any response marked *ignore* in the mark scheme should not count towards ***n***. • Incorrect responses should not be awarded credit but will still count towards ***n***. • Read the entire response to check for any responses that contradict those that would otherwise be credited. Credit should **not** be awarded for any responses that are contradicted within the rest of the response. Where two responses contradict one another, this should be treated as a single incorrect response. • Non-contradictory responses after the first ***n*** responses may be ignored even if they include incorrect science.

6 Calculation specific guidance

Correct answers to calculations should be given full credit even if there is no working or incorrect working, **unless** the question states 'show your working'.

For questions in which the number of significant figures required is not stated, credit should be awarded for correct answers when rounded by the examiner to the number of significant figures given in the mark scheme. This may not apply to measured values.

For answers given in standard form (e.g. $a \times 10^n$) in which the convention of restricting the value of the coefficient (a) to a value between 1 and 10 is not followed, credit may still be awarded if the answer can be converted to the answer given in the mark scheme.

Unless a separate mark is given for a unit, a missing or incorrect unit will normally mean that the final calculation mark is not awarded. Exceptions to this general principle will be noted in the mark scheme.

7 Guidance for chemical equations

Multiples / fractions of coefficients used in chemical equations are acceptable unless stated otherwise in the mark scheme.

State symbols given in an equation should be ignored unless asked for in the question or stated otherwise in the mark scheme.

Question	Answer	Marks
1(a)(i)	3 marks for: 1 humerus; 2 radius; 3 ulna;	**3**
1(a)(ii)	4 marks for any 4 of: 1 ligaments attach bone to bone / restrict movement / stabilise joint **OR** allow normal joint movements; 2 joint / fibrous capsule encloses / stabilises joint; 3 synovial membrane secretes / produces synovial fluid; 4 synovial fluid lubricates joint / allows friction-free movement / nourishes joint; 5 (hyaline / articular) cartilage prevents friction / stops bone rubbing together / absorbs shock; 6 bursae reduce friction (between bones and connective tissue) **OR** cushions joint / absorbs shock; 7 pads of fat absorb shock; 8 tendons help stabilise joint;	**4**
1(b)	6 marks for: 1 extension; 2 rectus femoris / vastus medialis / vastus lateralis / vastus intermedius; 3 concentric; 4 flexion; 5 rectus femoris / vastus medialis / vastus lateralis / vastus intermedius; 6 eccentric;	**6**
1(c)	4 marks for any 4 of: 1 (from the lungs blood enters) pulmonary **vein**; 2 (from pulmonary vein) to **left atrium**; 3 (from left atrium) through **atrioventricular** / **bicuspid valve**; 4 (through AV / bicuspid valve) to **left ventricle**; 5 (from left ventricle) through **semilunar** / **aortic valves**; Answers must be in appropriate sequence.	**4**

Question	Answer	Marks
1(d)	3 marks for any 3 of: 1 **atria** / **ventricles contract** faster; 2 diastolic phase shortens **OR** less time for filling during diastole; 3 atrial / ventricular systole is more powerful / faster; 4 increased stroke volume / cardiac output; 5 ventricular filling becomes an active process; 6 **at near maximum HR** less blood enters heart / stroke volume is decreased;	**3**
1(e)	2 marks for: 1 as bicarbonate ions / hydrogen carbonate ions **OR** combines with water / forms carbonic acid; 2 **combined** / **attached** with haemoglobin / **proteins OR** forms carbaminohaemoglobin;	**2**
1(f)	2 marks for any 2 of: 1 gases dissolve in layer of moisture / moist alveolar surface to allow gases to dissolve through walls; 2 thin / one-cell-thick membranes which means short diffusion distance / allows rapid / easier diffusion; 3 small diameter of capillaries enables slow transit time / compression of red blood cells / time for diffusion; 4 elastic fibres in the lungs / alveoli walls which means that the lungs can recoil; 5 surfactant reduces the tendency of the lungs to collapse (at end of respiration);	**2**
1(g)(i)	3 marks for: 1 A = volume of air breathed in per breath **OR** volume of air breathed out per breath; 2 B = inspiratory **reserve** (volume); 3 C = same / unchanged / no effect;	**3**

Question	Answer	Marks
1(g)(ii)	3 marks for any 3 of: 1 pO_2 in alveoli (105) is **greater** than pO_2 (40) in blood capillary; 2 blood capillary pCO_2 (45) is **greater** than pCO_2 (40) in alveoli; 3 diffusion involves movement of gases from high to low concentrations / partial pressures **OR** gases move down a diffusion gradient; 4 oxygen diffuses into blood capillary **OR** carbon dioxide diffuses into alveoli; Accept reverse arguments for points 1 and 2, e.g. pO_2 in blood capillary is less than in alveoli.	**3**

Question	Answer	Marks
2(a)(i)	2 marks for: 1 (closed) when taking a penalty the environment is unchanging / predictable / stable; 2 (discrete) taking a penalty has a clear beginning and end;	**2**
2(a)(ii)	2 marks for: 1 (internally paced) because performer decides **when** to take the penalty **OR how** fast / hard to kick / hit the ball; 2 (externally paced) because penalty must be taken soon after referee blows whistle / within a certain amount of time;	**2**
2(b)	4 marks for: 1 (retention) coach must ensure observer can remember / store skill in memory / forms mental image **OR** coach involves the performer's cognitive skills; 2 (retention) coach must ensure demonstration is meaningful / memorable / relevant / realistic / succinct / perfect / accurate / repeated; 3 (motor reproduction) coach must ensure performer has abilities / skills to complete the task; 4 (motor reproduction) coach gives performer opportunity to practise (as soon as possible);	**4**

Question	Answer	Marks
2(c)	4 marks for any 4 of: 1 ensure practice / repetition of skill / apply law of exercise; 2 use trial and error; 3 ensure performer is physically prepared; 4 ensure performer is mentally prepared; 5 use of satisfiers; 6 shaping of behaviour; 7 modifying environment;	**4**
2(d)	4 marks for any 4 of: 1 uses **sensory consequences**; 2 from knowledge of performance / kinaesthesis / intrinsic feedback / how did it feel; 3 uses **movement outcomes** / **response outcomes**; 4 from knowledge of results / success / failure / extrinsic feedback; 5 (the two rules are) used to adapt / modify a (future) response;	**4**
2(e)(i)	4 marks for any 4 of: 1 selective attention occurs **OR** important information is filtered in **OR** irrelevant information is filtered out; 2 short-term sensory store receives information from the display / environment **OR** STSS sends information to short-term memory; 3 short-term memory is 'working memory' **OR** organises / chunks / encodes information; 4 memory includes the DCR process; 5 short-term memory sends information to the long-term memory; 6 long-term memory **stores** information / patterns of movement / motor programmes **OR** decodes information (to STM); 7 short-term memory **runs** motor programmes; 8 memory process affects perception **OR** helps to judge what needs to be done (to perform / learn movement);	**4**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>2(e)(ii)</td><td>4 marks for any 4 of:

1 ensure relevant practice / overlearn the skill;
2 give reinforcement / praise / rewards;
3 improve selective attention / focus on specific cues;
4 teach mental rehearsal / imagery / visualisation;
5 improve (temporal / spatial) anticipation;
6 ensure optimum arousal levels / zone of optional functioning OR motivate performer;
7 increase intensity of the stimulus;
8 use positive transfer of learning / link to past experiences;
9 make information meaningful / enjoyable / fun / interesting / memorable / unique;
10 chunking / chaining / (progressive) part learning;</td><td>4</td></tr>
<tr><td>2(f)(i)</td><td>4 marks for any 4 of:

<table><tr><th>cognitive phase</th><th>autonomous phase</th></tr><tr><td>1 uses mainly extrinsic feedback</td><td>uses mainly intrinsic / kinaesthetic feedback;</td></tr><tr><td>2 use knowledge of results</td><td>uses knowledge of performance;</td></tr><tr><td>3 needs to be positive feedback</td><td>can deal with negative / critical feedback;</td></tr><tr><td>4 needs to be terminal feedback</td><td>can cope with concurrent / delayed feedback;</td></tr><tr><td>5 needs general / simple feedback</td><td>can use specific feedback;</td></tr><tr><td>6 aim to eliminate gross errors / mistakes</td><td>aim to refine technique;</td></tr></table></td><td>4</td></tr>
<tr><td>2(f)(ii)</td><td>2 marks for:

1 (cognitive phase) performer needs to be shown what to do / needs a demonstration / starting to form a mental image / starting to understand what needs to be done / lots of mistakes / needs to think about technique;
2 (autonomous phase) skills are accurate / well-grooved / habitual / fluent / automatic / little conscious control needed OR performer has spare attentional capacity / can focus on tactics / strategy;</td><td>2</td></tr>
</table>

Question	Answer	Marks
3(a)	3 marks for any 3 of: 1 spontaneous **OR** for everyone / anyone; 2 fun / enjoyment / non-serious / intrinsic / feel-good factor; 3 non-productive **OR** result not important; 4 childlike activity; 5 freedom of choice / free will / free time / voluntary; 6 limited moral obligation / commitment; 7 choice of space; 8 no pre-determined rules **OR** few / modified / made-up rules; 9 negotiated involvement / ending; 10 self-officiated **OR** low level of organisation;	**3**
3(b)(i)	3 marks for any 3 of: 1 involves performers who have reached excellence **OR** one of the best performers in the sport; 2 this relates to national and international standards; 3 top of the performance pyramid / few performers involved at this level; 4 predominantly professional performers; 5 popular with media;	**3**

Question	Answer	Marks
3(b)(ii)	4 marks for 4 of: Initiatives / policies must be named for descriptions to be credited. Sub-max. 2 marks for named initiatives / policies. Sub-max. 2 marks for descriptions. 1 (named initiative) e.g. National sport and physical activity policy (Mauritius); 2 (description) to inspire Mauritians to pursue excellence in world sport; 3 (named initiative) e.g. CJSOI / Jeux Des Iles / Indian Ocean Island Games (Mauritius); 4 (description) international multi-sport games competition; 5 (named initiative) e.g. World Class Programme (UK); 6 (description) supports athletes with realistic medal winning capabilities at the next Olympic / Paralympic Games; 7 (named initiative) e.g. High performance Sport New Zealand (HSNZ); 8 (description) works with National Sporting Organisations (NSOs) to contribute specialist performance support resources and expertise, to enable success; 9 (named initiative) e.g. Kenya Academy of Sports / Qatar Aspire (academy); 10 (description) develop sports talents through establishment and management of academies and training; Accept any other relevant policy / initiative and description.	**4**
3(c)(i)	5 marks for any 5 of: 1 become skilful in a sporting activity / knowledgeable about sport; 2 enjoyment / intrinsic / fun / satisfaction; 3 achieve success / strive to achieve high standards; 4 personal challenge of competition; 5 learn life skills / e.g. leadership / teamwork; 6 possibility of earning a living / career; 7 fame / praise / medals / status; 8 keep out of trouble / social control / hobby; 9 socialisation / learn cultural values, e.g. ethics;	**5**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>3(c)(ii)</td><td>5 marks for any 5 of:

Relevant factor must be explained for each mark.

<table>
<tr><td>factor</td><td>explanation, for example:</td></tr>
<tr><td>1 parents / siblings</td><td>if family play or encourage you to play sport you are more likely to copy them OR if family provide transport you are more likely to participate;</td></tr>
<tr><td>2 peer group</td><td>if friends play sport you are more likely to join in;</td></tr>
<tr><td>3 gender</td><td>men may be more likely to participate than women / stereotyping of women / some sports more male / female appropriate;</td></tr>
<tr><td>4 ability</td><td>involvement limited by fitness / talent ID / pathways in place;</td></tr>
<tr><td>5 race / culture</td><td>some ethnic groups still discriminate / stereotyping, e.g. some cultures place higher emphasis on supporting family and discourage participation;</td></tr>
<tr><td>6 religion</td><td>religion may inhibit, e.g. dress code / parental aspirations;</td></tr>
<tr><td>7 government status / attitude</td><td>policies / political influences in country may affect involvement;</td></tr>
</table>

Accept other suitable factors and relevant explanations.</td><td>5</td></tr>
</table>

Question	Answer	Marks
3(d)	4 marks for any 4 of: If no examples, max. 2 marks. 1 governments have sport departments / have policies for sport / provide funding for sport, e.g. Department for Digital, Culture, Media and Sport (UK); 2 political situations affect sport, e.g. Soviet invasion of Afghanistan led to Moscow 1980 Olympic boycotts / **OR** apartheid led to South Africa being banned from playing international matches; 3 government **legislation** affects sport, e.g. banning of blood sports / spectator safety / drugs made illegal; 4 **propaganda** / **nation building**, e.g. 1936 Berlin Olympics; 5 city bids to host events must be backed by government, e.g. Qatar World Cup; 6 sport used as a vehicle of **social control** by government, e.g. state-run sports schools; 7 terrorism, e.g. Munich 1972 / Atlanta 1996; 8 inequality permitted, e.g. racism / sexism / disability; 9 education, e.g. compulsory PE programmes; 10 e.g. (1968) Black Power Salute at Mexico Olympics; 11 e.g. 'take a knee' protest / anti-racism / Black Lives Matter at major sports events; Accept other suitable examples linking sport and politics. Accept reverse arguments, e.g. government choose not to put funding into sport is reverse of point 1.	**4**

Question	Answer	Marks
3(e)	6 marks for 6 of: If no examples from a sport, max. 4 marks. 1 increased media brings in more money to sport, e.g. sponsorship / TV rights; 2 changes in start times which means more matches / sports coverage available to watch, e.g. football matches with different kick-off times; 3 rule changes to make the game more entertaining, e.g. shorter formats in cricket; 4 foul play / cheating identified through technology to officials **OR** citing offences during / after game, e.g. putting a player on report; 5 better / accurate decisions, e.g. VAR / TMO / 3rd umpire; 6 emphasis on attacking play / spectacular / intense action, e.g. best plays of the week in basketball; 7 media encourages participation / highlight opportunities to take part; 8 media raises the profile of sports **OR** creates positive role models **OR** brings fame to performers; 9 sports stars gain **more** money for playing; 10 (retired) sports stars may gain employment in the media, e.g. commentators; 11 increased (spectator) awareness / knowledge of sport, e.g. teaching public rules / tactics; 12 (coaches) learning about an opponent's tactics / formation to prepare for a match; Accept other suitable examples showing how media has benefited sport.	**6**